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What is claimed is:

1. A method of determining acceptability of a press contact terminal including press contact blades which are separated from each other when the wire is inserted between the press  
5 contact blades so that a core wire of the wire is electrically connected to the press contact terminal, the method comprising the steps of:

storing a reference data showing a relationship between  
displacements of the press contact blades when the wire is  
10 brought into press contact with a normal one of the press contact terminal and contact loads between the press contact blades and the core wire;

inserting a detector which produces information in  
accordance with contact loads generated when the press contact  
15 blades are brought into contact with the core wire between the press contact blades of the press contact terminal as an object to be inspected;

acquiring a characteristic data showing a relation ship  
between the information in accordance with the contact loads  
20 produced by the detector and displacements of the press contact blades caused by the insertion of the detector; and

determining an acceptability of the press contact terminal as the object to be inspected based on the characteristic data and the reference data.

2. The method according to Claim 1, wherein a width of the detector in a direction of aligning the press contact blades is equal to or larger than an interval between the press contact blades and equal to or smaller than an outer diameter of the  
5 core wire.

3. A method of determining acceptability of a press contact terminal including press contact blades which are separated from each other when the wire is inserted between the press  
10 contact blades so that a core wire of the wire is electrically connected to the press contact terminal, the method comprising the steps of:

storing a reference data showing a relationship between displacements of the press contact blades when the wire is  
15 brought into press contact with a normal one of the press contact terminal and contact loads between the press contact blades and the core wire;

inserting the wire between the press contact blades of the press contact terminal as an object to be inspected;

20 measuring the displacement of the press contact blades caused by the insertion of the wire; and

determining the acceptability of the press contact terminal as the object to be inspected by predicting the contact loads between the press contact blades of the press contact  
25 terminal as the object to be inspected based on the measured

displacements and the reference data.

4. An apparatus of determining acceptability of a press contact terminal including press contact blades which are separated from each other when the wire is inserted between the press contact blades so that a core wire of the wire is electrically connected to the press contact terminal, the apparatus comprising:

a storing unit which stores a reference data showing a relationship between displacements of the press contact blades when the core wire is brought into press contact with a normal one of the press contact terminal and contact loads between the press contact blades and the core wire;

a detector adapted to be inserted between the press contact blades to produce information in accordance with the contact loads between the press contact blades and the detector;

a calculating unit which calculates the contact loads based on the information produced by the detector;

a measuring unit which measures the displacements of the press contact blades caused by the insertion of the detector;

a forming unit which forms a characteristic data showing a relationship between the contact loads calculated by the calculating unit and the displacements of the press contact blades measured by the measuring unit; and

a determining unit which determines the acceptability of the press contact terminal based on the characteristic data and the reference data.

5     5.     The apparatus according to claim 4, wherein the measuring unit includes:

        a light emitting portion which emits light,

        an image pickup portion which picks up an image by receiving the light from the light emitting portion and  
10     positions the press contact terminal between the light emitting portion and the image pickup portion in a state that an optical axis of the light emitted by the light emitting portion and a longitudinal direction of the wire inserted between the press contact blades are in parallel with each other,  
15     and

        a processing portion which calculates the displacements of the press contact blades based on an outer shape of the press contact blades, an image of which is picked up by the image pickup portion.

20

6.     The apparatus according to claim 5, wherein

        the detector includes a piezoelectric element capable of being in contact with the press contact blades,

        the calculating unit calculates the contact loads based  
25     on an output current from the piezoelectric element, and

a width of the piezoelectric element in a direction of aligning the press contact blades is equal to or larger than an interval between the press contact blades and equal to or smaller than an outer diameter of the core wire.

5

7. The apparatus according to claim 5, wherein the detector includes a rotor inserted between the press

contact blades and is rotated by a drive source,

the calculating unit calculates the contact loads based  
10 on a torque of a rotation of the rotor, and

both of a minimum width and a maximum width of the rotor in a direction of aligning the press contact blades are equal to or larger than an interval between the press contact blades and equal to or smaller than an outer diameter of the core wire.

15

8. An apparatus of determining acceptability of a press contact terminal including press contact blades which are separated from each other when the wire is inserted between the press contact blades so that a core wire of the wire is  
20 electrically connected to the press contact terminal, the apparatus comprising:

a storing unit which stores a reference data showing a relationship between displacements of the press contact blades when the wire is brought into press contact with a normal one  
25 of the press contact terminal and contact loads between the

press contact blades and the core wire;

an inserting unit which holds the press contact terminal as an object to be inspected and inserts the wire between the press contact blades of the press contact terminal;

5 a measuring unit which measures the displacement of the press contact blades caused by the insertion of the wire; and

a predication determining unit which determines the acceptability of the press contact terminal by predicting the contact loads between the press contact blades of the press contact terminal as the object to be inspected and the core wire based on the displacement of the press contact blades measured by the measuring unit and the reference data stored in the storing unit.

15 9. The apparatus according to claim 5, wherein the measuring unit includes:

a light emitting portion which emits light;

an image pickup portion which picks up an image by receiving the light from the light emitting portion and positioning the press contact terminal between the light emitting portion and the image pickup portion in a state in which an optical axis of the light emitted by the light emitting portion and a longitudinal direction of the wire inserted between the press contact blades are in parallel with each other; and

25

a processing portion which calculates the displacements of the press contact blades based on an outer shape of the press contact blades, an image of which are picked up by the image pickup portion.

5

10. An apparatus of determining acceptability of a press contact terminal including press contact blades which are separated from each other when the wire is inserted between the press contact blades so that a core wire is electrically connected to the press contact terminal, the apparatus comprising:

a storing unit which stores a reference data showing a relationship between displacements of the press contact blades when the wire is brought into press contact with a normal one of the press contact terminal and contact loads between the press contact blades and the core wire;

an inserting unit which holds the press contact terminal as an object to be inspected and inserts the wire between the press contact blades of the press contact terminal;

20 a measuring unit which measures the displacement of the press contact blades caused by the insertion of the wire; and

a predication determining unit which determines the acceptability of the press contact terminal by predicting the contact loads between the press contact blades of the press contact terminal as the objected to be inspected and the core



wire based on the displacement measured by the measuring unit and the reference data stored by the storing unit.

11. An apparatus of determining acceptability of a press  
5 contact terminal including press contact blades which are separated from each other when the wire is inserted between the press contact blades so that a core wire of the wire is electrically connected to the press contact terminal, the  
apparatus comprising:

10 a storing unit which stores a reference data showing a relationship between displacements of the press contact blades and contact loads between the press contact blades and the core wire when the wire is brought into press contact with a normal one of the press contact terminal;

15 a holding unit which holds the press contact terminal;  
a detector adapted to be inserted between the press contact blades to produce information in accordance with the contact loads between the press contact blades and the detector;

20 a calculating unit which calculates the contact loads between the press contact blades and the detector when the detector is inserted between the press contact blades of the press contact terminal held by the holding unit;

a measuring unit capable of measuring the displacements  
25 of the press contact blades caused by the insertion of the

detector between the press contact blades and the  
displacements of the press contact blades caused by insertion  
of the wire between the press contact blades;

5 a forming unit which forms a characteristic data showing  
a relationship between the contact loads calculated by the  
calculating unit and the displacements of the press contact  
blades measured by the measuring unit;

10 a determining unit which determines the acceptability  
of the press contact terminal as an object to be inspected based  
the characteristic data formed by the forming unit and the  
reference data stored in the storing unit;

an inserting unit which holds the press contact terminal  
as the object to be inspected and inserts the wire between the  
press contact blades of the press contact terminal; and

15 a prediction determining unit which determines the  
acceptability of the press contact terminal by predicting the  
contact loads between the press contact blades of the press  
contact terminal as the object to be inspected and the core  
wire based on the displacements of the press contact blades  
20 caused by the insertion of the wire between the press contact  
blades and the reference data stored in the storing unit.

12. The apparatus according to Claim 11, wherein the  
measuring unit includes:

25 a light emitting portion which emits light;

an image pickup portion which picks up an image by receiving the light from the light emitting portion and positioning the press contact terminal held by one of the holding portion and the inserting unit between the light emitting portion and the image pickup portion in a state in which an optical axis of the light emitted by the light emitting portion and a longitudinal direction of the wire inserted between the press contact blades are in parallel with each other; and

10 a processing portion which calculates the displacements of the press contact blades from an outer shape of the press contact blades, an image of which is picked up by the image pickup portion.

15 13. The apparatus according to Claim 11, wherein the detector includes a piezoelectric element capable of being in contact with the press contact blades, the calculating unit calculates the contact loads based on an output current from the piezoelectric element, and

20 a width of the piezoelectric element in a direction of aligning the press contact blades is equal to or larger than an interval between the press contact blades and equal to or smaller than an outer diameter of the core wire.

25 14. The apparatus according to claim 11, wherein

the detector includes a rotor inserted between the press contact blades and is rotated by a drive source,

the calculating unit calculates the contact loads based on a torque of a rotation of the rotor, and

5 both of a minimum width and a maximum width of the rotor in a direction of aligning the press contact blades are equal to or larger than an interval between the press contact blades and equal to or smaller than an outer diameter of the core wire.

10 15. The apparatus according to claim 12, wherein

the detector includes an expander inserted between the press contact blades and expanded by supplying a pressurized fluid from a pressurized fluid supply source,

15 the calculating unit calculates the contact loads based on a pressure of the pressurized fluid supplied to the expander and the outer shape of the press contact blades, and

a maximum width of the expander in a direction of aligning the press contact blades is equal to or larger than an interval between the press contact blades and equal to or smaller than  
20 an outer diameter of the core wire.

16. A method of measuring a width of a press contact terminal in a press contact state, wherein the press contact terminal includes a bottom wall on which a wire is to be placed, a pair  
25 of side walls erected from opposite edges of the bottom wall

and opposed to each other with an interval, and press contact blades respectively extended from the side walls in directions of approaching each other, the method comprising the steps of:

5 acquiring an outer shape of the wire, the pair of side walls and the press contact blades viewed from a position along a longitudinal direction of the press contact terminal with which the wire is brought into press contact;

calculating a center of the wire based on the acquired outer shape; and

10 calculating a distance between outer faces of the pair of side walls in a direction passing the calculated center and along the bottom wall.

17. An apparatus of measuring a width of a press contact terminal in a press contact state, wherein the press contact terminal includes a bottom wall on which a wire is to be placed, a pair of side walls erected from opposite edges of the bottom wall and opposed to each other with an interval, and press contact blades respectively extended from the side walls in  
15 directions of approaching each other, the apparatus comprising:

a light emitting portion which emits light;

an image pickup portion which picks up an image by receiving the light from the light emitting portion;

25 a terminal holding portion which holds the press

contact terminal provided between the light emitting portion and the image pickup portion and press fit with the wire between the press contact blades in a state in which an optical axis of the light emitted by the light emitting portion and a  
5 longitudinal direction of the wire are in parallel with each other; and

a processing portion which calculates a center of the wire based on an outer shape of the press contact terminal the image of which is picked up by the image pickup portion and  
10 calculates a distance between outer faces of the pair of side walls in a direction passing the center and along of the bottom wall.

18. A method of grasping a press contact state of a press  
15 contact terminal including press contact blades which are separated from each other when the wire is inserted between the press contact blades so that a core wire of the wire is electrically connected to the press contact terminal, the method comprising the steps of:

20 inserting a detector between the press contact blades to produce information in accordance with contact loads generated when the detector is inserted between the press contact blades; and

grasping the contact loads based on the information  
25 produced by the detector.

19. The method according to claim 18, wherein

the press contact blades are displaced in direction  
separating from each other when the wire is inserted to  
5 therebetween, and

a relationship between the contact loads and the  
displacements is grasped by measuring the displacement of the  
press contact blades.

10 20. The method according to claim 18, wherein a width of the  
detector in a direction of aligning the press contact blades  
is equal to or larger than an interval between the press contact  
blades and equal to or smaller than an outer diameter of the  
core wire.

15 21. An apparatus of grasping a press contact state of a press  
contact terminal including press contact blades which are  
separated from each other when the wire is inserted between  
the press contact blades so that a core wire of the wire is  
20 electrically connected to the press contact terminal, the  
apparatus comprising:

a detector which produces information in accordance with  
contact loads between the press contact blades and the detector  
by being brought into contact with the press contact blades;

25 and

a calculating unit which calculates the contact loads based on the information produced by the detector,

wherein the calculating unit calculates the contact loads by inserting the detector between the press contact  
5 blades.

22. The apparatus according to claim 21, wherein the press contact blades are displaced in directions of separating from each other when the wire is inserted to therebetween, further  
10 comprising:

a measuring unit capable of measuring displacements of the press contact blades caused by the insertion of the detector between the press contact blades,

wherein the measuring unit grasps a relationship between  
15 the contact loads and the displacements by measuring the displacements of the press contact blades.

23. The apparatus according to Claim 22, wherein the measuring unit includes:

20 a light emitting portion which emits light;

an image pickup portion which picks up an image by receiving the light from the light emitting portion;

a holding portion provided between the light emitting portion and the image pickup portion, which holds the press  
25 contact blades in a state in which an optical axis of the light



emitted by the light emitting portion and a longitudinal direction of the wire inserted between the press contact blades are in parallel with each other; and

a processing portion which calculates the displacements  
5 of the press contact blades from an outer shape of the press contact blades the image of which are picked up by the image pickup portion.

24. The apparatus according to claim 21, wherein  
10 the detector includes a piezoelectric element capable of being brought into contact with the press contact blades, the calculating unit calculates the contact loads based on an output current from the piezoelectric element, and  
a width of the piezoelectric element in a direction of  
15 aligning the press contact blades is equal to or larger than an interval between the press contact blades and equal to or smaller than an outer diameter of the core wire.

25. The apparatus according to claim 21, wherein  
20 the detector includes a rotor inserted between the press contact blades and is rotated by a drive source, the calculating unit calculates the contact loads based on a torque of a rotation of the rotor, and  
both of a minimum width and a maximum width of the rotor  
25 in a direction of aligning the press contact blades are equal

to or larger than an interval between the press contact blades and equal to or smaller than an outer diameter of the core wire.

26. The apparatus according to claim 23, wherein

5 the detector includes an expander inserted between the press contact blades and expanded by supplying a pressurized fluid from a pressurized fluid supply source,

the calculating unit calculates the contact loads based on a pressure of the pressurized fluid supplied to the expander  
10 and the outer shape of the press contact blades, and

a maximum width of the expander in a direction of aligning the press contact blades is equal to or larger than an interval between the press contact blades and equal to or smaller than an outer diameter of the core wire.

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